On Urban Water Environment Issues in China

1. Laws and Regulations on Urban Water Environment

a. ***Environment Protection Law*** of PRC (Promulgated in 1989)

b. ***Water Law*** of PRC (Promulgated in 1988)

c. ***Water Pollution Prevention and Cure Law*** of PRC (Promulgated in 1984 and revised in 1996)

d. ***Urban Drainage Regulation*** of the State Council of PRC (Under formulation)

2. Condition of Municipal Wastewater Treatment

According to statistics, by the end of 1996 there were 666 cities in China. The total volume of municipal wastewater discharge was 35.14 billion cubic meters in 1996, of which only 8.33 billion cubic meters was treated. The treatment ratio was 23.6%. 20.89 billion cubic meters wastewater discharged to municipal sewage pipe network. In 1996, there were 153 municipal wastewater treatment plants in China, treating 2.38 billion cubic meters of municipal wastewater and treatment ratio of municipal wastewater was 11.4%.

In China, the treatment ratio of industrial wastewater is higher than municipal wastewater. Since 1970s, the central government and local governments have strengthened the control of industrial pollution source. A serial of laws, regulations and policies had been issued and some measures had adopted for the control of industrial wastewater. In 1996, the treatment ratio of industrial wastewater was 76.8%. But the treatment ratio of municipal wastewater was 11.4%, the biological secondary treatment ratio was only 9.3%.

3. Investment and Management System of Facilities of Municipal Wastewater Treatment

Since 1980s, big changes have taken place in the investment system of facilities of municipal wastewater treatment in China. Before 1980, the most municipal wastewater treatment projects were invested by the central government; since 1980 the projects have been invested by local governments, especially by city governments. Even through the reforms have undertaken in China for about 20 years, the municipal wastewater treatment is still taken as a welfare facilities, all fund, including construction and management fund, for municipal wastewater treatment is mainly

born by city governments, which has not a stable source. According to the investigation of 21 completed or under construction municipal wastewater treatment plants, the financial resources for the construction of municipal wastewater plants is as the following table.

The Financial Resources for the Construction of Municipal Wastewater Plants (%)

Int. Loan	Tax of City Maintain	Local Government Budget	Fee of forming a completed system	
24.21	20.37	7.65	16.15	
Domestic Loan	Fee of Pipe Network use	Fee of Wastewater Discharge	Appropriate fund from the Central Government	Others
7.2	6.67	5.66	0.54	8.5

From the above table, it can be known that only the fee of pipe network use and the fee of wastewater discharge are from enterprises, others are or will be mainly from the city governments. It is only construction cost of municipal wastewater treatment plants. The daily management cost is still a big financial shoulder. In order to improve the quality of urban environment, some cities have built or are building some municipal wastewater treatment plants in the recent years. Thus they have a big financial shoulder too. Some municipal wastewater treatment plants stop work sometimes for lack of financial funds. Therefor it is necessary to collect reasonable fee for supporting the construction and daily management of municipal wastewater treatment facilities and for improving urban water environment.

According to the Environment Protection Law and the Water Pollution Prevention and Cure Law, enterprises are required to pay the fee of wastewater discharge over the standard and the fee of wastewater discharge (or the fee of wastewater treatment) for their wastewater discharge. Because of faulty implementation, collection of the fees didn't carry its point. Its condition is improved recently. The State Development Plan Commission and the Ministry of Construction issued the Price Management Measure of Urban Water Supply in 1998. The measure regulates that the fee of wastewater treatment should be collected together with the fee of drinking water according to the volume of drinking water. This is good a beginning. There is an effective measure for collecting the fee of wastewater treatment. The range of collecting wastewater treatment is extended from enterprises to citizen. The measure has been implemented in some cities. It will improve the condition that municipal wastewater plans are shortage of financial resources.

4. On Water Conservation and Wastewater Reuse

There is a shortage of water resources in China. The amount of fresh water for per capita is about one fourth of the average of the whole world and stands 110th on the global list. China is ranked by UN as one of 13 most water-deficient countries in the world. About half of 666 cities are suffering from water shortage. According to the statistics, an average of RMB 230 billion in industrial output value has been affected by water deficiencies. On other hand, with population growing and the development of economy and society, water usage and quality is being increased. In order to tackle the water shortage in some cities, some large water diversion projects were carried out in Tianjin, Qingdao etc. But in general, the stake of water shortage was not improved so well. At present, the only way to relieve the water shortage in North China cities is to conserve and reuse water. By now, all level governments, and enterprises and institutions are paying special attention to water conservation – there is a special organization, to manage water conservation, formulating water index for production enterprise in each city. This organization will encourage those enterprises that conserve water and penalize those enterprises that exceed the planed water. As in urban water reuse, some cities have listed in routine agenda and implementation program. These methods promote water conservation and reuse in enterprises.

In China, research of desalination of seawater also is being developed, but economic issue limits using seawater as water source.

5. Research and Development of Wastewater Treatment Technology in City

In recent ten years, China inputs a great amount of money for research and development of wastewater treatment technology. Some progress was made in the technology and engineering of wastewater treatment and water pollution prevention due to the widespread research and development. Especially, through international cooperation and scientific key tackling, the technological and design level of urban wastewater treatment is improved greatly and the gap to international advanced level is being shortened. As more capital is being input by Central Government to urban infrastructure in recent years, these technologies and equipment are playing the role. But overall in China, the technologies and equipment of water treatment have quite difference with the advanced countries especially with European countries. These years, many water treatment facilities were constructed by foreign loan. In these projects, the equipment was purchased in the price higher than international market, which is severe pounding Chinese water treatment enterprise.

6. Prospect of Control and Conservation of Urban Water Environment in China

There is about 70% wastewater direct discharge, bringing about different level contamination to the surface water and groundwater, without treatment in China. This is due to severe shortfall of urban wastewater treatment facilities and operation input. By 1998, wastewater treatment fee began to be levied, which made the construction and operation of wastewater treatment has a stable fund. From present situation, the newly levied wastewater treatment fee is far to meet the requirement of construction and operation of wastewater treatment. But along with strengthening levy on wastewater treatment, ratio of wastewater treatment in urban sewage pipe will be increased, the construction and operation of urban wastewater treatment will be in better circle way. At same time, with the strengthening supervision of environment, ratio of industrial wastewater treatment will be also increased. It can be predicted that in not long future, urban wastewater treatment will step out of dire straits and urban water environment will be better and better.